Mimulus Memo

California Native Plant Society
KERN CHAPTER

SEPTEMBER 2017

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Eastern Sierra Wildflowers: A Trip Report and a Book Review

by Nancy Nies

IN MID-JULY OF 2017, PAUL AND I MADE A WEEKEND TRIP TO the Eastern Sierra. Visiting two of our favorite beauty spots — Horseshoe Meadow and Big Pine Creek — we found snow-capped peaks, full creeks and waterfalls, and a spectacular showing of wildflowers. Later, while visiting another east-side haunt, the Eastern Sierra Museum in Independence, we found an interesting new flower guide to add to our collection — **Wildflowers of the High Sierra and John Muir Trail**, by **Elizabeth Wenk** (Wilderness Press, 2015). This article will be a combination trip report and book review: an account of plants we saw blooming, interspersed with fascinating tidbits about them taken from Wenk's book.

Photos by Nancy Nies

Penstemon rostriflorus (Bridge's penstemon) along the road to Horseshoe Meadow – *14 July 2017*

In an easily portable guide of 266 pages, Wenk focuses on plants growing above 8,000 feet, from Yosemite in the north to the Whitney region in the south. She covers almost half of all high-elevation species, grouping them by color and including each plant's names (common, scientific and family), flowering time, elevation range, at least three locations where it can be found, and detailed descriptions of its flowers, stems and leaves. The book also boasts a helpful introduction and an extensive bibliography. What we especially like — and what makes up for the small size of the photos — is Wenk's inclusion of 45 informative sidebars providing details on the ecology of specific plants.

Penstemon sp.,
– *Horseshoe Meadow, 14 July 2017*

As we drove up the switchbacks from Lone Pine to Horseshoe Meadow (el. 10,000 ft.), we enjoyed panoramic

Mimulus nanus var. *mephiticus* (skunky monkeyflower)
– Horseshoe Meadow, 31 July 2017

Castilleja applegatei subsp. *pallida* (wavyleaf paintbrush) *– July 15, 2017*

views of the Owens Valley, much cooler temperatures, and our first taste of the wildflowers to come — *Penstemon rostriflorus* (Bridge's penstemon), lining the road in places with swathes of vibrant red. In and around the meadow itself, we were to see the whorled, purplish-blue blooms of another penstemon, perhaps *P. rydbergii*. In Wenk's book, the sidebar entitled "***Red Versus Blue Penstemons***" explains that the original penstemons had blue-purple flowers, and that those with red flowers came from more recent mutations. This color shift, Wenk says, was probably in response to pollinators, with hummingbirds pollinating the red flowers, and bees, the blue.

The bright-yellow inflorescences of several species — including *Potentilla glaucophylla* (*Potentilla diversifolia*) (blueleaf cinquefoil) — stood out against the lush green of the meadow. In a sidebar called "***A Rainbow of Flowers,***" Wenk discusses the three basic groups of plant pigments: carotenoids (for yellow, orange or red); flavonoids, including anthocyanins (for white, yellow, red, pink, purple or blue); and betalains (for yellow, orange, red or violet). We know that these pigments, present in colorful fruits and vegetables, are beneficial to our health. What we may not know, says Wenk, is that they also color the petals of Sierra flowers, attracting certain pollinators and protecting plants against both excess light and UV radiation. A high concentration of one pigment, or a combination of more than one, can create more intense color. The brilliant yellows we saw in the meadow, for example, may have been due to a mix of carotenoids and yellow flavonoids.

Wenk's "***Buzz Pollination***" sidebar tells us that *Primula jeffreyi* (*Dodecatheon jeffreyi*) (Sierra shooting star) is one of the species most commonly pollinated by this method (also known as **sonication**), whereby a bumblebee grips the flower, wraps her body around the pollen sacks, and buzzes, her body's vibration releasing the pollen. On July 14 we saw that a high concentration of Sierra shooting star, at peak bloom, had turned a large marshy area of Horseshoe Meadow a pinkish-purple. The bumblebees must have been busy!

(Fast-forward 17 days to July 31, when we again visited Horseshoe Meadow. The roadside displays of Bridge's penstemon and the meadow's show of Sierra shooting star were now on their way out, but we were treated to the sight of something new — a stunning magenta carpet of the low-growing *Mimulus nanus* var. *mephiticus* (*Mimulus mephiticus*) (skunky monkeyflower) in the wide, gravelly areas on the meadow's periphery. Wenk tells us that this species can also be yellow, and we did see the two colors growing together, though the magenta was much more abundant.)

The day after our July 14 visit to Horseshoe Meadow, we headed into the mountains a bit farther north. We drove from the town of Big Pine to the Big Pine Creek trailhead, where we began hiking. At an altitude of between 7,700 and 8,500 ft. along the creek's south fork, we found *Eriogonum umbellatum* var. *nevadense* (Sierra Nevada sulfur flower) blooming in abundance along the trail, its luminous yellow frequently punctuated by the orange-red of two different *Castilleja* (paintbrush) species — *C. applegatei* subsp. *pallida* (wavyleaf paintbrush) and *C. miniata* subsp. *miniata* (giant red paintbrush). From Wenk's intriguingly-named sidebar, "***The Paintbrushes' Dark Secret***", we learn that the plants are **hemiparasites**, taking at least some of their resources from a host species by attaching themselves to

Eriogonum umbellatum var. *nevadense* (Sierra Nevada sulfur flower)
Big Pine Creek South Fork trail – July 15, 2017

Monardella odoratissima subsp. *pallida* (pennyroyal) – *July 15, 2017*

Calochortus bruneaunis (Bruneau mariposa lily) – *July 15, 2017*

the host's root.

Farther up, we came upon a dazzling display of *Calochortus bruneaunis* (Bruneau mariposa lily) extending for some distance along the trail and up a hillside. Its petals are white, and Wenk describes its showy center as "*an elegant patterning of yellow and deep burgundy,*" with dark-purple stamens. Two more blooms we saw, less plentiful but deserving of mention: the long-stemmed *Angelica lineariloba* (poison angelica), whose white inflorescence Wenk describes as "*big and showy, with many small hemispheres of flowers . . . joining together into a larger sphere*"; and the aromatic *Monardella odoratissima* subsp. *pallida* (pennyroyal), its purple heads each made up of 30-50 flowers. In her "***How Old Are Alpine Plants?***" sidebar, Wenk reports that a researcher, reading shrub growth rings under a microscope, has found that *M. odoratissima* can reach 45 years of age. Who knew?

As Elizabeth Wenk writes, the number of summer wildflowers you'll find in the Sierra varies widely year-to-year according to snowpack and time of snowmelt. It's clear that, with its unusually heavy snowfall, 2017 was an outstanding year for flowers. We were fortunate in finding exceptional displays at both Horseshoe Meadow and Big Pine Creek, as well as in finding the excellent guidebook, **Wildflowers of the High Sierra and John Muir Trail**. We witnessed a true "*rainbow of flowers,*" to borrow Wenk's phrase — an unforgettable memory of the summer of 2017. ✿

Thank You to:

... **Ellen Cypher** for her presentation relating to her on-going work on the preservation of the Bakersfield Cactus, given at the June meeting.

... **Rich Spjut, Nancy Nies, Paul Gipe, Fred Chynoweth, Andy Honig** — all of whom contributed to the September newsletter. ✿

Introducing a NEW CNPS Southern California Conservation Analyst Position!

MANY TIMES, CNPS IS THE **ONLY** PARTY AT the table negotiating for the preservation of native plants and their habitats.

Recently CNPS received a generous bequest from **Elizabeth C. Schwartz,** providing the opportunity to increase our conservation presence. **A new CNPS Southern California Conservation Analyst position** has been envisioned which will support SoCal CNPS chapters and conservation volunteers, helping grow their capacity to engage in important local conservation work.

It is **IMPORTANT** that this position be ON-GOING, since conservation success often requires YEARS of dedication and persistence. You and your chapter can help secure the future of plant conservation in Southern California by pledging your support today.

Please, consider making a gift to support the SoCal conservation position; share your thoughts with CNPS staff and your chapter leadership; and most importantly, please lend your voice when important, urgent conservation issues come to your attention

To donate go to *support.cnps.org* and after selecting an amount, go to the "Designation" pull-down and select "**Schwartz Fund for Southern California Conservation**". ✿

An Erosa Saga

by Andy Honig

BECAUSE OF MY CONCERN FOR MONARCH butterflies and their habitat needs, I became fascinated with milkweeds in general and *Asclepias fascicularis* (narrow leafed milkweed) and *A. Erosa* (desert milkweed) in particular because both occur naturally on **Panorama Vista Preserve (PVP)**

Photos by Sasha Honig

A. erosa cluster on North Chester Ave.

Tarantula hawk wasp

The showier of the two is *A. erosa*. *A. fascicularis* grows low to the ground, but I can be driving at 70 MPH on the highway and easily spot even one *erosa* off to the side. You just can't miss that erect stem with the large blue-gray leaves. If it's in bloom, its clusters of cream-colored blossoms at the apex make it even more noticeable.

If I stop and get up close, I'm amazed at the number of native bees that circle around it, and there probably will be tarantula hawk wasps as well. These notable insects will be sipping nectar and pollinating as they go. Tarantula hawks are large with brilliant red wings, real standouts, but until this year, we had never seen them in our La Cresta area neighborhood. But, this year, we have two *erosas* in our yard, and a tarantula hawk showed up even though the nearest *erosa* patch is a couple of miles away.

"If you ask about the monarch butterflies, that's another story."

But how to establish a new population of *A. erosa*?

It is not commonly carried in native plant nurseries, but I can gather *erosa* seeds, usually in August (if you know where to find *erosa* growing).The seeds can take several months to germinate but they might take a year if they germinate at all. Patience is necessary.

One method to facilitate germination is to refrigerate the seed for about three months after placing them next to damp paper towels in a baggie.

This worked for me last year when I and several other volunteers seeded several prepared areas at PVP.

About 30 plants grew and most bloomed, but none set seed pods last year. *Asclepias* is a perennial that dies back to its roots every winter but grows back in the spring. The *erosa* at PVP did that. The leaves were a bit larger this year than last year, but none are getting taller than 2 feet; they have blossoms but no seed pods have appeared.

We also seeded the same area last February with seeds gathered elsewhere the previous August, but none germinated. I also seeded the patch in my front yard and none germinated there either. However, I'm hoping these seeds will germinate next spring. Once *erosa* has more than a few small leaves it does not readily transplant. However, I lucked out with two seedlings I rescued at PVP last year. They had sprouted in a 2-inch layer of dirt over hard asphalt. I carefully removed these small seedlings and planted them in my yard. They did well, although they didn't bloom. This year, however, two of them went gangbusters. One grew to about 9 feet and set two seed pods. The other is about 7 feet and has 4 productive pods and maybe will have two more. Apparently the difference between the PVP *erosa* and the two in my yard is some water every week or two.

If you ask about the monarch butterflies, that's another story. So far I haven't seen any in Bakersfield this year, although the other day I may have caught a glimpse of one. This story does not end yet, but will be continued next year. Let me know if you have had experience with *erosa* or if you see monarchs or their caterpillars munching on milkweed anywhere around Bakersfield. ✿

Left: Seedlings emerging from a prepared area at Panorama Vista Preserve. Seeds had been refrigerated for about three months prior to planting.

Above: The author and his 7- and 9-foot-tall *erosas* in his front yard.

President's Message: Decline in Bryophyte Abundance in the United States*

by Richard Spjut

MY FIELD EXPERIENCE WITH BRYOPHYTES began with my MA thesis at Humboldt State University under **Dan Norris** — titled **Mosses of the Marble Mountains Wilderness Area, Siskiyou County, California** (1971). Abstract reported 177 species and varieties of moss, 37 new to California, most circumboreal with southernmost occurrence in the Klamath Mountains. Liverworts were also collected but not identified, on the advice of my major professor. I recall rocks along most streams and canyon walls completely covered with bryophytes. I returned to the Marbles this century, and found riparian rocks — such as along the North Fork of the Salmon River — often appearing more bare than mossy. I also collected bryophytes for cancer research as an employee of the **USDA Agricultural Research Service** (**ARS**) in Beltsville, Maryland under a cooperative agreement with the **National Cancer Institute** (**NCI**). Our mission was to find plants with new chemicals for cancer chemotherapy, the methodology guided by taxonomy and pharmacology.[1]

Photos by Richard Spjut

Top: *Polytrichastrum pallidisetum*, above a close-up of the moss in the White Mountains of New Hampshire (*Spjut & P. Gilliland 11779*). **Above:** a large collection of the same moss laid out on a residential driveway in Maryland to dry and remove debris; cleaned sample weighed 79 lbs., sent to John Cassady at Ohio State University, who reported on "Ohioensins and pallidisetins: novel cytotoxic agents from the moss J. Nat. Prod. 57 (1994): 32–41 (Zheng GQ, Ho DK, Elder PJ, Stephens RE, Cottrell CE, and Cassady JM). **Below**: Structure of Ohioensin A.

Antitumor activity in bryophytes was initially discovered from a 1–2 kg dried and mechanically cleaned sample of the moss *Polytrichastrum* (*Polytrichum*) *ohioense* that I collected in 1976 during my lunch hour where I worked at the USDA Beltsville agriculture station.[2] *P. ohioense* was a good candidate because bryophytes had rarely been collected for the NCI. An extract of the moss that I collected was first active in KB,[3] a routine bioassay that had led to discovery of taxol in bark of western yew (*Taxus brevifolia*), which was first collected in 1962, and attained drug status 1992. Novel anticancer compounds were discovered in the moss by **John Cassady** and collaborators at **Ohio State University**, and the new active compounds were named "ohioensins."[4] In 1996, I named a lichen in Cassaday's honor, *Vermilacinia johncassadyi*.

Ed Terrell, a grass taxonomist for the ARS, and I often walked the Beltsville farm roads during lunch hour — where deciduous forests and open pastures were protected from outsiders by security police — to record the flora, bryophytes and lichens included.[5] Shaded creek banks by secondary deciduous forests, at the time — in the late 1970's and early 1980's — were carpeted with mosses *Plagiomnium cuspidatum* and *Thuidium erectum*[6]. However, during the late 1980's their growth diminished, while other species, *Polytrichum commune* and *Polytrichastrum ohioense*, along forest margins remained vigorous — especially *P. ohioense* where illegal dumping of broken bottles evidently became filled and buried from accumulation of soil over perhaps 30 years.

Claopodium crispifolium with *Nostoc*. **Top:** Mat of moss dry. **Center:** close-up of young, wet, leafy branches with cyanobacteria, blue-green splotches (*Nostoc*) among leaves, especially in red circled areas. **Bottom:** *Nostoc* freed from leaves of another moss, *Ceratodon purpureus* (image from website, South Wales: Bryophytes, posted on Charles Hipkin's blog, 28 Nov 2015, *http://southwalesbryos.blogspot.com/2015/11/onllwyn-coal-tips.html*. The dominance of the antitumor active moss "*Hylocomium splendens* (not shown) depends in part on the presence of epiphytic cyanobacteria that contribute significantly to nitrogen fixation (O. Zackrisson, T.H. DeLuca, F. Gentili, A. Sellstedt, & A. Jäderlund. Oecologia. 2009 May;160(2):309-19). It has shown antitumor and antibiotic activities from samples I collected in West Virginia, Maine, and Oregon.

During March 1979, while collecting samples for the NCI in Baja California Sur, I received a phone call

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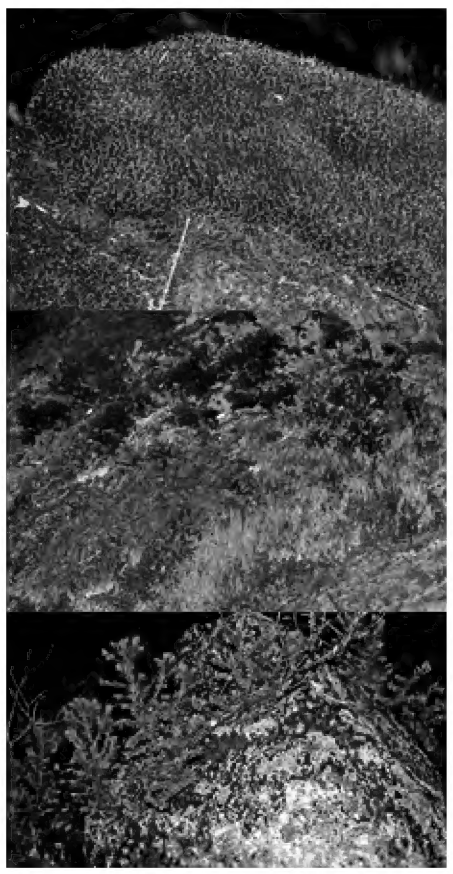
* *Based on Observations from Forays and Field Work for Cancer Research*



Vanishing bryophytes. **Top:** Healthy moss *Paraleucobryum longfolium* on rock in northern Vermont. **Center:** The same species vanishing on another rock in Vermont, occurring with *Dicranum fulvum* (dark green). **Bottom:** *Taxus canadensis* (Canada yew) in the White Mountains of Maine, creeping over rock believed to have once been covered with bryophytes. All images taken Sept. 1991.

from my brother in Mckinleyville CA that my dad — in advanced stages of colon cancer — was expected to live only a few days, and that he wanted me there. The vascular flora of northern California had already been extensively collected for the NCI. Thus, my only business for traveling 1,800 miles — to see my dad — was bryophytes. Soon after I arrived, my dad died. The day after, one of the moss samples I collected, *Claopodium crispifolium*, became a high priority recollection for its anticancer activity. In 1981, I obtained 75 kg (dried), from northwestern California and Oregon. Ansamitocin P-3 was identified in the samples, a highly cytotoxic compound generally found in soil actinomycetes, but also known as maytansinoids i. shrubs of *Gymnosporia* spp. in East Africa, and *Colubrina* spp. in Texas and California.[7] However, I also felt anticancer activity was due to associated cyanobacteria observed in the moss. This idea was supported by cyanobacteria found active from samples I collected dried on soil in woodlands and wet as nodules along open lake margins,[8] and that the ansamitocin in the moss was not identified by bioassay-guided activity. Further, the scanty growth of *Claopodium* I left behind on the original rock — re-sampled by **Dan Norris** — was only marginally active, suggesting that the best activity in *Claopodium* occurred in the youngest parts, less associated with dead debris at base.

The NCI terminated their cooperative agreement with the ARS in Oct 1981-82 due to alleged lack of discoveries, while I was in Western Australia still making new discoveries such as concurvone later isolated from smokebush (*Conospermum* cf. *incurvum*) for its anti-HIV activity. Moreover, Dan Norris and I had had collected hundreds of bryophyte samples from California, Oregon, and the Eastern U.S. that yielded many new active species,[9] and others new to science, e.g., *Orthotrichum spjutii*.[10] Through university contracts with **World Botanical Associates**, I obtained recollections of most active bryophytes during the mid 1980's, from Maine to Tennessee, and from Washington to California, and continued to find bryophyte species not previously sampled,[11] until the late 1980's and early 1990's when their abundance seemed to decline rapidly, reported as follows in an abstract that I submitted for a scientific meeting held in the Great Smoky Mountains National Park:[12]

> *"Bryophytes (mosses, liverworts and hornworts) seem to be disappearing rather quickly from many areas within our national forests, state parks, and national parks in the United States. The diminishing growth has been most dramatic since 1985. Streams and lakes in many parts of the country, which were recalled as having a luxuriant growth only a few years ago, are now devoid of bryophytes. Large rocks on northern forested slopes, expected to have bryophytes, are often stark. This disappearance is not uniform, but it has been particularly evident in the White Mountains National Forest, and it is also evident in the Great Smoky Mountains National Park…*
>
> *Acid rain due to pollutants from industrial metropolitan sources might naturally be suspected as the cause, but this does not appear to be the whole explanation. Pollution of streams by loggers, campers, swimmers, and miners is probably why bryophytes have disappeared from the streams. The high density of automobiles travelling on forest or park roads during lengthy periods of an existing atmospheric inversion layer may lead to increased buildup of toxic substances contributed by auto exhaust. During daylight, these pollutants may accumulate in the atmosphere more at the lower elevations, and later precipitate in the morning dew, or in rain, at concentration levels above the threshold tolerated by most bryophytes. This would account for the localized patterns of bryophyte disappearance at the foothill elevations, especially noticeable along major automobile routes…"*

Above: Stream in alder forest near Korbel, California, May 1981. Note bryophytes on rocks and alder bark. *Claopodium crispifolium* occasionally found here on rocks and at the base of trees, but not in sufficient quantity to justify a collection.

In July 2010, I returned to sites where I collected moss samples in 1979 to see if the species had grown back. At one site near Willow Creek, Boise Creek — where *Claopdoium crispifolium* was collected—the original rock, ~3 m diam., was gone. In that same creek where I had collected 5.75 lbs of *Scleropodium obtusifolium* (dried) within a radius of 5 meters, no mosses were evident; I saw more *S. obtusifolium* in Mill Creek during our March 2017 field trip. It might be interesting to return to all the locations where I once collected bryophytes for the NCI and report on what remains or what has changed; see also http://www.worldbotanical.com/bryophytes.htm. ✿

References:

1 Spjut, R. W. 1985. Limitations of a random screen: Search for new anticancer drugs in higher plants. Econ. Bot. 39: 266–288.

2 Samples of bryophytes were initially identified by Dan Norris because I did not have a microscope in my office, and because bryophytes were not officially budgeted for collection. Samples were obtained during my free time.

3 Activity in KB Cell Culture is defined by a concentration level of the test substance at which 50% of the cancer growth is inhibited (assumed to be proportional to the amount of protein synthesis), expressed as ED50 ≤20 µg/m.

4 Zheng, G-q., C-j. Chang, T. J. Stout, J. Clardy and J. M. Cassady. 1989. Ohioensin-A: A novel benzonaphthoxanthenone from *Polytrichum ohioense*. J. Amer. Chem. Soc. 111: 5500. Ohioensins have also been found in the Antarctic moss, *Polytrichastrum alpinum* by Seo et al., Bioorg Med Chem Lett. 2008 Jan 15;18(2):772-5. Epub 2007 Nov 17

5 Terrell, E. E., J. L. Reveal, R. W. Spjut, R. F. Whitcomb, J. H. Kirkbride, Jr., M. T. Cimino, and M. T. Strong. 2000. Annotated list of the flora of the Beltsville Agricultural Research Center, Beltsville, Maryland. USDA ARS-155, Natl. Tech. Info. Serv., Springfield, VA.

6 This moss is generally known as *Thuidium delicatulum*; however, the bryophyte specialists at the Smithsonian Institution, Harold Robinson, impressed upon me on several occasions that the correct name was *T. erectum*; he even suggested I do a Ph.D thesis on this problem.

7 Suwanborirux, K., C.-J. Chang, R. W. Spjut, and J. M. Cassady. 1990. Ansamitocin P-3, a maytansinoid, from *Claopodium crispifolium* and *Anomodon attenuatus* or associated actinomycetes. Experientia 46: 117–120.

8 Spjut, R.W., J. M. Cassady, T. McCloud, D. H. Norris, M. Suffness, G. M. Cragg, and C. F. Edson. 1988. Variation in cytotoxicity and antitumor activity among samples of a moss, *Claopodium crispifolium* (Hook.) Ren. & Card. (Thuidiaceae). Econ. Bot. 42(1): 62-72.

9 R. W. Spjut, M. Suffness, G. M. Cragg, and D. H. Norris. 1986. Mosses, liverworts and hornworts screened for antitumor agents. Econ. Bot. 40: 310–338.

10 *Orthotrichum spjutii* D.H. Norris & Vitt, Nova Hedwigia 56(1–2): 260–262, f. 1. 1993. "Tuolumne Co., outlet of valley of Koenig Lake, east slope of the Sierra Nevada, east of Sonora Pass along Hwy 108, Toiyabe National Forest.

11 Spjut, R. W., D. G. I. Kingston, and J. M. Cassady. 1992. Systematic screening of bryophytes for antitumor agents. Trop. Bryology 6: 193–202.

12 Spjut, R. W. 1991. Bryophytes Vanishing from our National Forests and National Parks. Abstract, Seventeenth Annual Meeting on Scientific Research in the National Parks of the Upland Section for the Southeastern Region, May 1991.

California Native Plant Society

CNPS is the leader for providing reliable information on California native plants and plant conservation. Comprehensive information about California's flora and vegetation communities is available throughout the state for conservation and educational purposes. CNPS's leaderships influences personal ethics and actions, as well as public policy for native plant protection.

Chapter Meetings

upcoming TOPICS

Thursday, Sept. 21, 2017 - 7 pm
Presenter: **Stephen Cooley**
Growing Natives from Seeds

Thursday, Oct. 19, 2017 - 7 pm
Presenter: **Melanie Baer Keeley**
Landscaping with Natives

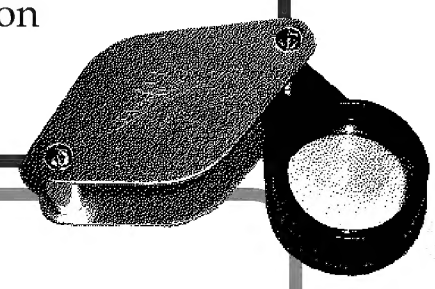
Thursday, Nov. 16, 2017 - 7 pm
Presenter: **Dr. Anna Jacobsen**
Mediterranean Shrublands

Thursday, January 18, 2018 - 7 pm
Presenter: **James R. Shevock**
Vascular Plants and Bryophytes of Kern County

NOTE: Field Trip to follow **Jan. 20 2018**

All chapter meetings are held the 3rd Thursday of each month at the Hall Ambulance Community Room 1031 21st Street (21st & N St.), Bakersfield, CA.

Meeting times:
6 pm — Discussion groups on plant identification and native plant gardening
7 pm — Program presentation



What Do You Want from Your CNPS Chapter?

TELL US WHAT YOU THINK ABOUT CNPS' Kern Chapter? How are we doing? What would you like your CNPS chapter to do differently? Do you want more field trips? Where would you like field trips to go? What kind of programs would you like to see more of? Would you like to be on our steering committee and help chart the direction of your chapter? Is there something you'd like to help with? Let us know. Send an email to **Paul Gipe**, *pgipe@igc.org*, or to **Rich Spjut**, *richspjut@gmail.com.* ✿

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California Native Plant Society
KERN CHAPTER

Mimulus Memo

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The Kern Chapter of the

California Native Plant Society

California Native Plant Society meets the third Thursday of each month at:
Hall Ambulance Community Room
1013 21st St. (21st & N St.), Bakersfield, CA.
Chapter website: kern.cnps.org

The California Native Plant Society is a non-profit organization dedicated to the conservation of California native plants and their natural habitats, and to increasing the understanding, appreciation, and horticultural use of native plants. CNPS has 31 chapters throughout the state and membership is open to all persons — professional and amateur — with an interest in California's native plants. Members have diverse interests including natural history, botany, ecology, conservation, photography, drawing, hiking and gardening. As a Kern County resident, your membership includes Fremontia, *a quarterly journal with articles on all aspects of native plants; the* Bulletin, *a statewide report of activities and schedules; and* The Mimulus Memo, *the newsletter of the Kern Chapter.*

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